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**54) NONAQUEOUS ELECTROLYTE FOR SECONDARY BATTERY AND
SECONDARY BATTERY USING IT**

(57)Abstract:

PROBLEM TO BE SOLVED: To suppress the decomposition of an organic solvent on negative electrode side and improve the charge and discharge efficiency by using a fluorine-containing ester compound as a mixture with a nonaqueous electrolyte, and setting the reduction potential of the fluorine-containing ester compound to a specified value to the oxidation-reduction potential of lithium.

SOLUTION: The reduction potential of a fluorine-containing ester compound is set to 1.0-0.7 to the oxidation-reduction potential (Li/Li⁺) of lithium. The fluorine-containing ester compound is represented by the general formula R₁CF_XCOOR₂. In the formula, R₁ represents hydrogen atom, fluorine atom, or a 1-3C alkyl group, and R₂ represents a 1-2C alkyl group. More specifically, CHF₂COOCH₃, CHF₂COOC₂H₅, and CH₃CF₂COOCH₃ are preferably used. As a carbonic ester organic solvent used together with the fluorine-containing ester compound as an electrolyte, propylene carbonate, ethylene carbonate or the like can be given.